This serves as a supplement to my initial report of October 4, 2021, and supplemental report of December 8, 2021, in the Jones v. Raymond case.

I have reviewed the reports prepared by Michael Rogers, P.E. and Kathleen Rodowicz, Ph.D., and I have been made aware of court decisions from other jurisdictions that imply that I am required to select a single particular design alternative for each of the defects I identified in my Report dated October 4, 2021. I provide this supplement to ensure that there is no confusion about my opinions and to insure that my opinions are not rejected should it be determined that Mississippi law demands that I choose a singular design alternative, as opposed to identifying several alternatives, each of which would have protected Mr. Jones without negatively affecting the utility of the subject Raymond 4250 forklift.

I identified four aspects of the design of the Raymond 4250 that Raymond knew, or in light of reasonably available knowledge or in the exercise of reasonable care should have known, were dangerous and caused Mr. Jones injuries and for which there was a feasible design alternative that would have to a reasonable probability prevented Mr. Jones from being harmed. Each of these designs is a design alternative that would have, to a reasonable probability, prevented the harm suffered by Mr. Jones without impairing the utility, usefulness, practicality or desirability of the forklift to its users or consumers.

The four defects I discussed in my report are (1), the unguarded rear opening into the operator compartment; (2), the design of the foot brake system including the lack of a sensor under the operator's left foot to apply the brake if the operator leaves the normal operator position; (3), the lack of a sensor in the back rest to disconnect the power if the operator leaves the normal operator position; and (4), the design of the multifunction joystick that exacerbates the danger to the operator who finds himself falling out to the left as did Mr. Jones. I only identified one alternative joystick, and one design for the back rest, so those alternatives will not be discussed again here.

With respect to the unguarded rear opening into the operator compartment, I identified the use of a door as the preferred alternative design that would have, to a reasonable probability, prevented the harm suffered by Mr. Jones without impairing the utility, usefulness, practicality or desirability of the forklift to its users or consumers. A door is the alternative design I chose and discussed. It is a single alternative design even though there are multiple ways to implement it. I did describe multiple ways that a door could be implemented (i.e., spring loaded, interlocked, or latched), but at the end of the day a door is a single alternative in my mind as an engineer. The implementation is just details. Each of the various iterations discussed in my report would have, to a reasonable probability, prevented the harm suffered by Mr. Jones without impairing the utility, usefulness, practicality or desirability of the forklift to its users or consumers. However, in the event I am required by Mississippi law to choose one single door

design, for purposes of complying with the dictate, I choose the Raymond door that it describes as its "Rear Operator Guard." A photograph of this door is shown below in Figure 1.

Figure 1: Rear operator guard

I choose this door not because it is necessarily the best. I choose it because Raymond is well aware of the protections it provides, it is available from Raymond's product catalog and thus Raymond is well aware of its cost and retail price, Raymond's spring-loaded door has been tested in the real world as demonstrated by the lack of known injuries to operators of moving sidestance forklifts, and is being used by multiple users such as Gap. This spring activated door would have protected Mr. Jones from injury had it been installed on the subject forklift. I have described how doors, including spring doors, accomplish this task in my report.

In this supplemental report, although I am identifying a single alternative design for each of the dangers I have identified in my original report, in order to ensure that my opinions are not excluded, as an engineer, the idea that there is only one reasonable alternative design to mitigate and remedy a design that has unreasonable and unacceptable risks is inconsistent with best engineering practices. That kind of thinking stifles curiosity and innovation by discouraging the search for ever better and safer designs. It also ignores the reality that there are very few dangerous designs that do not have multiple superior alternative designs – each with its own advantages and disadvantages. Requiring a single alternative design implies that there is one single perfect alternative; and that is very rarely the case even though there are multiple options. For example, with respect to the alternative to the open unguarded occupant compartment, in this supplement I have chosen a spring-loaded door. Advantages include ready availability and most rapid egress times. But it can be opened while the forklift is moving. I could have chosen an interlocked door and eliminated the risk of it being opened while the forklift is moving, but in

doing so this design would introduce complexity, additional costs, and longer egress times. The point being, as some say, "there are multiple ways to skin a cat."

Mr. Rogers claims that "Dr. Meyer does not acknowledge either the Newell Rubbermaid or Ingersoll Rand foot/leg crush injuries that occurred on Raymond Standup lift trucks with rear doors, both of which were included in the Raymond document production for this case. These injuries illustrate that lower limb crush injuries occur even in the presence of doors." This is a specious argument. The Newell Rubbermaid incident involved a man standing with one foot on the floor and the other in the forklift when hit by another forklift. No one has ever recreated that event to see how it would be different had there not been a door. Additionally, that scenario is so unusual that it would not affect my design decision process. As to the Ingersoll Rand event, that was a fore and aft forklift design whereas the subject 4250 is a sidestance. And, just as with the Newell Rubbermaid event no one has ever recreated that event to see how it would be different had there not been a door. Furthermore, and this is critical, just because a particular safety feature does not provide perfect protection is not a reason for excluding it. If that was the case, we would not enjoy the benefits of seatbelts, airbags, safety glass, ABS brakes and myriad other safety devices either.

With respect to the lack of a sensor under the operator's left foot, to apply the brake if the operator leaves the normal operator position, I identified two basic design options. The reader will recall that the failure to have a sensor under the operator's left foot violates ANSI standards. To bring this design to a reasonably safe, and compliant, condition two possibilities were discussed in my original report: One is to have two brake pedals with the operator being taught to use the right foot to apply the brake. If the left foot leaves the compartment, that too will operate the brake. The other is the adoption of the design known as the Hyster-Yale Operator Sensing System (OSS). While both are improvements that to a reasonable probability, would have prevented the harm suffered by Mr. Jones without impairing the utility, usefulness, practicality or desirability of the forklift to its users or consumers, I am choosing the push down brake pedal with laser presence sensing offered by Hyster and Yale. This technology was available at the time the subject forklift was sold in 2015. In fact, Raymond had an option identified in its Features Brochure (its own OCSS system) that implements laser like sensors to sense when an operator is not in the normal operator position. That system is software driven so we know Raymond has the skills to make this work like the Hyster-Yale Operator Sensing System (OSS). As for the push down brake aspect of the design, that is not complex at all. It's just a pedal connected to the same system as Raymond's current "lift up" brake. There is absolutely no engineering reason that this design cannot be installed on the Raymond 4250.

Again, while I think the two pedal design is a design improvement, if I must choose a single embodyment of a design change that will apply the brake when the operator's left foot leaves the normal operator position, and for application of the emergency brake, I choose the Hyster-Yale Operator Sensing System (OSS). I choose this design because it allows the most freedom of stance for the operator, I have personally been on this machine and find it comfortable to stand in and it is being accepted in the marketplace, the push down pedal will result in both feet being on the floor at all times which promotes operator stability, and the cost of machines with this feature is competitive or Hyster and Yale could not offer this feature. It is my opinion that, to a reasonable probability, the use of the Hyster-Yale Operator Sensing

System (OSS) push down brake pedal with laser occupant sensing design would have prevented the harm suffered by Mr. Jones without impairing the utility, usefulness, practicality or desirability of the forklift to its users or consumers.

Mr. Rogers criticized my opinion that Mr. Jones' injury was likely the result of a loss of balance. He materially misunderstands how the balance system works and therefore his criticism has no basis. A loss of balance can be instigated in a variety of ways. One of them is the expected broadening of the base of support in anticipation of impact and deceleration. As Dr. Jeka and I both explain, the anticipatory movement that puts the operator's foot to his left where there is no floor, can be expected to cause the kind of body movement described by Mr. Jones. This will be prevented, to a reasonable probability, by the design alternatives I have described. Dr. Rodowicz' and Mr. Rogers' assertion that it can be predicted how a human who has lost their balance will fall assumes humans are like sacks of potatoes and that only gravity and the laws of physics dictate where they will end up. That is simply not true because human operators like Mr. Jones will dynamically resist falling, fight the process, and thus how they end up cannot be perfectly predicted. Dr. Rodowicz' opinions are flawed by this same analysis. Engineers are taught to assume this when taught how to design safe products.

Mr. Rogers criticized my estimate of walking speed. Whether Mr. Jones was traveling 2.7 or 3.2 mph is not significant because the design alternatives I believe are needed are just as effective, if not more so, at higher speeds. The actual speed is simply not a critical aspect of my opinions.

Mr. Rogers claims that my opinions are invalid because, in his words "Dr. Meyer appears to have made no attempt to scientifically determine whether the design alternatives would have prevented injury in the subject scenario." What he seems to argue is that we must know the exact path of the forklift, something that is unknowable, to opine about how design changes would affect the outcome of the subject collision. That is simply wrong. Mr. Rogers is creating confusion where none needs to exist. Simply put, the path of the forklift does not matter to the existence of the defects. The forklift could be going in a straight line or in circle and it would still need a door and a safe floor/brake design. Regardless of the path being followed immediately before impact, had the forklift been equipped with a door, and specifically the Raymond door, that door would have served as a physical barrier, tactile reminder and visible boundary that would have, to a reasonable probability, kept Mr. Jones' foot out of harm's way. Similarly, had the design encouraged his left foot to remain on the floor so that his right foot could operate the push down brake, or had the forklift stopped automatically if his left foot left the operator positions, both of which happen with the Hyster-Yale Operator Sensing System (OSS), to a reasonable probability, his left foot would not have left the operator compartment and been crushed.

I do not feel it necessary to rebut every disagreement Mr. Rogers and I have as I believe that my initial report is quite thorough. However, I will respond to Mr. Rogers' concerns about how doors affect egress times. There are indeed various tests that have been done to document these times. The important takeaway is that every test, regardless of the tester or product, demonstrates that the egress times are not materially affected. If the reason Raymond does not have a safety door is egress times, the data simply does not support that position. Egress is rapid with and without a door; and given the relevant speeds (those used for entering and exiting

trucks for the most part) the time is immaterial to a safe exit if that is available. Raymond cannot quibble about mere milliseconds of delay while at the same time using hip bolsters and seats on these products. If *any* interference with egress is too much as argued by Raymond (a position I disagree with) then seats and bolsters must be removed. That they are included demonstrates that there are reasons other than minimal effects on egress times for Raymond's failure to include safety doors.

For the sake of formality, I offer this supplement and the opinions contained herein to a reasonable degree of engineering certainty. The conclusions presented are based on work performed to date. I anticipate additional information to become available and reserve the right to revise and amend my conclusions in light of that material and as more analysis is performed.

Respectfully submitted,

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